

## **CORRESPONDENCE ANALYSIS BETWEEN THE PLACE WHERE THE CRIMES OCCUR AND THE VARIETY OF CRIMES IN INDONESIAN**

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### **Abstract**

During the upcoming Asia Pacific Free Trade Era, especially in this year of ASEAN Economic Community, the number of criminality is increasing significantly. Those include the life threatening action as well as breaking the law and/or norm where many people are the victims. The meaning of “criminality” is derived from the basic word “crime” which means the violation of non-written norm in sociality from which the criminal could be punished socially. Furthermore, when those are written literally legal, they have the power to sentence certain violation. Nevertheless, the violations of norm or what we consider as crime, could vary depend on the location where it takes place. In some extend, the norm would never be the same in every place. That result that some violations can be considered as criminal in some places but yet categorized as criminal on other places. Several studies have studied on these issues. They suggest that there is relation insignificantly on how the parameter of places, variety, and when it takes place affect others. This paper discusses the example on those 2 aspects and tries to find their relation using correspondence analysis. In summary, by considering a certain area in Indonesian, there are more significant number change on the correspondence on the relation between those 3 issues

**Key words:** Criminality, Correspondence Analysis, Criminal Variation

### **INTRODUCTION**

The reason of criminal behavior can occur because economy, social, politic and the other factors. A person is considered as criminal when he/she disobeys certain precept and behaves unpleasant while having activity in a certain group. Wresbiwiro (1995) explain that alcohol contains certain liquid, namely ethanol 1-55 %, if the consumptions is over the limit of given condition ( $> 100 \text{ mg / dl}$ ), it can make the shift feeling, emotional person, and disrespecting her/his friends, motoric coordination disorder, and the brain network disorder. The person in that state cannot control his/her motoric coordination and could behave whatever they want unconsciously

The globalization effect has changed every sector in community in all country. The existing association country (regional, bilateral, or multilateral) results positive and negative impact. Positive value is that the association could increase trading; improve technology and science application internationally. However, the undesirable effect is that the openness of international migration can increase criminality (Atmasasmita, 1995). The increasing number of criminal incidents could affect the welfare and safety community negatively. However, the criminality occurrence must be generated by certain factor and the information of which can be used to stop criminality exactly and efficient.

It is undeniable that, there is no environment community with zero criminal act in particular community as well as industrial community (Soeprapto in Purwanti, 1998). Therefore, to elicit how the place of criminal occurrence and to what extend those can be used as the solutions, this paper will answer the correspondence between the place of criminal occurrence

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and the various numbers of criminality

Criminology can be considered as new study which has been developing since 1850 along with sociology, anthropology, and psychology. Based on the idea of *homo homini lupus*, where basically every human always think about themselves over other people, it is undeniable that the need of norms in guiding each person interest is important to secure every people from crime. They are: religion norms, attitude norms, and law norms in which has own rule of rewards and punishments

Plato (427- 347 BC), one of Greece phylosopher, suggest in his book, *Republiek* , that gold is the source of criminal motivations. The social-economy gaps between the richest and the poorest would result on the disrespectfull on their relational norms. There will be deterioration on their social relationship by which rogues, thieves, and rapist would growth rapidly in number as well as others criminals. Dr. Wetten, in his book, suggest that if there are no gaps of social and economy between society, then the value of morality upheld in that area, because the area is no blurring, no tyranny and no sense of envy and hate.

Aristotle (384-322 BC) pupil Plato in Politiek point about the relationship between crime and society, that poor communities will cause crime and rebellion. Doeth great villain is not to satisfy a requirement of life (food, clothing, home and others), but to meet the needs of luxury. Plato and Aristotle Plato -especially adage: the punishment meted out not for doing evil, but so that no evil deed a very big influence on criminal law, especially in terms of punishment.

According to the French anthropologist named P. Topinard (1830-1911) stated criminology of the word "crimen" which means crime or criminals and "logos" meaning science, the science of criminology is aimed at investigating the science of symptoms in widest possible criminal action. The crimes are subject investigation, meaning that the crimes committed and those who do (Kempe in Koesnon, 1962). Legally criminal act is an act in society, including criminal action. If viewed more in the criminal act is an act that is contrary to the norms of decency.

The following is several factors that influence the criminal action. According to the Koesnon Kempe (1962) there are several factors that can cause a person to commit a crime:

### ***Economy environment***

Flow priority socialist suggest that the economy environment that give rise to criminal acts. The flow of this socialist influence in the late 18th and 19th century startup arises when a new system that is visible in the economy increases. Mind becomes dull misery, ignorance and never civilized. This is affecting the incidence of crime and the state of inadequate shelter can lead to immoral actions. People do evil because the person has a passion want to have goods or money that belongs to someone else. There is not a crime in the community that has nothing to do with the human soul. As long as there are still people that there are groups of rich and poor, the lust of the poor would like to have raised with their wealth displayed by the surrounding.

### ***Alcoholism***

Drinking alcohol will affect the criminal acts that have been reduced but still large. Drinking alcohol affect the fate of future generations increasingly bleak. According Nadesul (2006), the liquor in large quantities and a long time may cause physical health, mental and disruption of public order and security.

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Tabel 1 The impact of alcohol use

The content of alcohol in blood	The effect of alcohol consumption
50 mg/dl	Still able to socialize, still calm
80 mg/dl	Coordination is reduced (reduced physical and mental abilities), reflection becomes slow (both of these interfere with the safety of the driver)
100 mg/dl	Impaired coordination are clearly visible
200 mg/dl	Confusion, decreased memory and coordination problems more severe (cannot run)
300 mg/ dl	loss of consciousness
400 mg/dl	Coma, death
In the pancreas	Inflammation (pankreatitis), a state of low sugar, cancer
at the heart	Abnormal heartbeat (arrhythmia), heart failure
In blood vessels	High blood pressure, sterosklorosis, stroke
In the brain	Confusion, loss of coordination, poor short term memory, psychosis
In nerve	Decreased ability to walk (nerve damage in the legs that controls movement)

Taufiq and Darma (in Rini, 2007) suggest that alcoholism is a Personality Disorder caused lust for compulsive drinking, so people will drink alcohol to excess and become a habit. Alcohol is generally pass through four stages: pre alcoholics, prodromal, acute, chronic.

Alcoholics will lose consciousness and behavior tends to commit a crime. The effect of drinking alcohol is killing, rape and acts of violence will become aggressive and aggressive act which can be embarrassing at the time he was conscious. For example, they do a fuss and spoil the party atmosphere under the influence of alcohol. The use of alcohol can affect the financial, consumption continues to increase, the dependence for continued use (additive) will urge the perpetrators to commit fraud or criminal acts in order to get money to meet the needs of drinking.

### ***Lack of civilization***

Civilization and knowledge that are too low and cause a lack of self-control involved in criminal acts. Human Sciences who commit crimes do exist causes, but outside of awareness or ability to curb it, as said by some criminologists, that people do evil because Satan possessed the power of darkness hit, eventually studied by psychiatrists and psychology, that those who commit crimes on him there is an abnormal condition. The second argument, the influence of positivism science says that the person who committed the crime, due to the influence of the environment, such as the condition of the chaotic society, mutual-mimic echoes in various relationships, economic environmental factors such as poverty, the motto of the flow of positivism influence is "die welt ist Mehr Schuld an mir, als ich "(That's more responsible for how it is for me, rather than my own"). Both the poor temperament someone is determined not only by himself but the environment take responsibility for his actions. criminals and not born. Do not distinguish between a mother's womb the baby who lived in her lap would be a good or evil man. One or two number-sign at the head of a newborn baby, is not good or bad temper stamp at a later

### ***War***

War is never been examined as large-scale experiments in the field of sociology, because the factors that may cause more prominent criminal action. According classical flow on criminology, no need to look for the causes of crime, because every act performed under consideration conscious person who has taken into account the pros and cons. If he succeeds on

his actions, then he is called profit view is influenced by the philosophy of hedonism, utilitarianism and rationalism in the 18th century. Why men to commit crimes, according to this flow that every human being has to have its own count on the pros and cons of the actions performed. Classical flow mention teachings are "Hedonistic psychologist" that humans regulate his behavior on the consideration of the ups and downs, like obtained from certain actions compared with grief derived from the same act, the offender is expected to act independently and make their choice based on the hedonistic calculation only.

## RESEARCH METHOD

This quantitative research is done to find the corresponding factors between the place of crime occur and what kind of criminality happen. The analysis use correspondence analysis as the statistical method in finding the best whole presentation of data collection in rows and columns presented in matrices (Grenacre, 1984).

The calculation on the distance based on the concept of distance by chi-square ( $\chi^2$ ). The distance between row  $i$  and  $i'$  can be formulate as follows:

$$d_{(i,i')}^2 = \sum_{j=1}^n \frac{1}{f_{.j}} \left( \frac{f_{ij}}{f_{i.}} - \frac{f_{i'j}}{f_{i'.}} \right)^2$$

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Where:

$$i = 1, 2, \dots, n$$

$$j = 1, 2, \dots, p$$

$$f_{ij} = \text{relative frequency on cell of row } i \text{ and column } j$$

$$f_{i.} = \text{total relative frequency of row } i$$

$$f_{.j} = \text{total relative frequency of column } j$$

The reason in choosing why the distance by chi-square ( $\chi^2$ ) is that this distance fullfill the equivalence distribution framework which are described as follow:

1. If 2 identical rows (the distribution of relative frequency in each class is equal in value) is joined, then the distance between columns is invariant.
2. If 2 identical columns is joined, then the distance between rows is invariant.

This properties assure that generally omitting identical categories as one category would not make information loss during the analysis (Lebart et al, 1984).

Suppose  $N$  is  $i \times j$  - matrix denoted  $N_{(ixj)} = (N_{ij})$  to the  $k^{\text{th}}$  power, the corresponding matrices  $P$  can be derived from dividing each element on  $N$  with the total element in  $N$  denoted as follow:

$$P_{(ixj)} = \left( \frac{1}{n} \right) N, \text{ with } n = [N]$$

From  $P$ , total rows vector  $r = P I$  and total columns vector  $c = P' I$ . The elements of this vectors is the mass value for corresponding profil such that we note these vector as mass vectors. The row profile matrix could be denoted as:

$$R_{(ixj)} = D_r^{-1} P$$

and columns profile matrix could be denoted as

$$C_{(jxi)} = D_c^{-1} P',$$

Where  $D_r$  is diagonal matrix with  $d_{ii}$  is the total of the  $i^{\text{th}}$  row from  $P$ , and  $D_c$  is diagonal matrix with  $d_{jj}$  is the total of the  $j^{\text{th}}$  column from  $P$ .

To determine the coordinate of the row and column profile on configuration mapping, the extension of singular value of matrices is needed.

$$(P - rc') = AD_{ji}B^T \quad \text{where. } A^T D_r^{-1} A = B^T D_c^{-1} B = I$$

Where:

$D_{ji}$  = diagonal matrice from singular value

$A$  = left singular vector matrices ordo  $i \times j$

$B$  = right singular vector matrices ordo  $i \times j$

From the aforementioned formula, the rows profile coordinate is denoted as

$$F = D_r^{-1} A D_{ji}$$

$$G = D_c^{-1} B D_{ji}$$

To make interpretation more clear on the main axis. The concept used is norm contribution and relative contribution. Normal contribution is used for eliciting information on varians proportion by which can append additional information based on varians explained proportion given from each category on the formulation of the main axis by using the formula:

$$KM = \frac{(mass) \times (K_k^{(i)})^2}{\mu_k^2}$$

Where:

$mass$  = relative frequency in each category

$(K_k^{(i)})^2$  = the coordinate of the  $i^{th}$  point on the  $k^{th}$  axis

$\mu_k$  = the  $k^{th}$  singular value

Relative contribution (Lebart et.al, 1984) is used to examine the varians proportions on each category explained by the main axis with the fromula as follow:

$$KR = \cos^2 \theta_k = \frac{(K_k^{(i)})^2}{\sum (K_k^{(i)})^2}$$

Note:

$KR$  = Relative Contribution

$\theta_k$  = Angle between  $K_k$  and  $K_k^t$

## RESULT AND DISCUSSION

The following is the table of the number of crimes occurs on each type of crimes based on the data gathered from each police department on provinces in Indonesian.

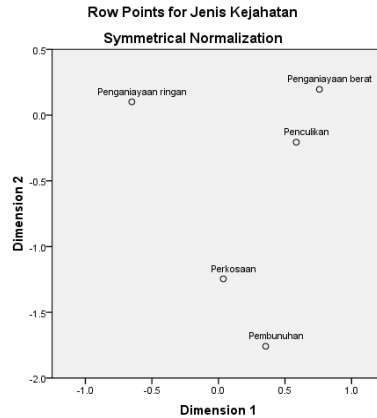
Table 2: the number of crime types based on the human as victims of crimes  
for whole Police Department in Indonesian (2011)

Unit Police Departement (Kepolisian Daerah)	Types of Crime					Total
	Pembunuh an (Murder)	Perkosaan (Rape)	Penganiayaa n Ringan (Maltreatment )	Penganiayaa n Berat (Severe Percecution n)	Penculikan (Abduction )	
Aceh	36	89	1.288	376	22	1811
North Sumatera	163	190	2.722	3.405	38	6518

West Sumatera	19	70	1.359	743	8	2199
Riau	21	39	491	567	11	1129
Jambi	23	41	0	299	2	365
South Sumatera	145	160	454	1500	17	2276
Bengkulu	41	54	339	72	2	508
Lampung	30	69	0	125	13	237
Bangka Belitung	9	52	180	294	1	536
Kepulauan Riau	13	16	339	36	2	406
Metro Jaya	74	68	548	1797	69	2556
West Java	91	96	994	983	44	2208
Central Java	47	99	441	305	26	918
Di Yogyakarta	12	12	254	163	11	452
East Java	96	97	812	777	12	1794
Banten	8	12	32	167	1	220
Bali	14	21	234	51	3	323
West Nusa Tenggara	24	87	928	240	28	1307
East Nusa Tenggara	66	134	2.143	38	19	2400
West Kalimantan	124	52	60	182	12	430
Central Kalimantan	48	67	126	115	0	356
South Kalimantan	1	2	4	1	0	8
East Kalimantan	28	39	365	533	4	969
North Sulawesi	55	48	508	1305	84	2000
Central Sulawesi	13	31	1.328	100	5	1477
South Sulawesi	113	127	1.311	628	16	2195
Southeast Sulawesi	35	55	401	47	0	538
Gorontalo	16	32	666	182	0	896
Maluku	11	20	376	86	2	495
North Maluku	14	12	2	175	0	203
Papua	77	86	1.178	625	2	1968
Indonesian	1.467	1.977	19.883	15.917	454	39698

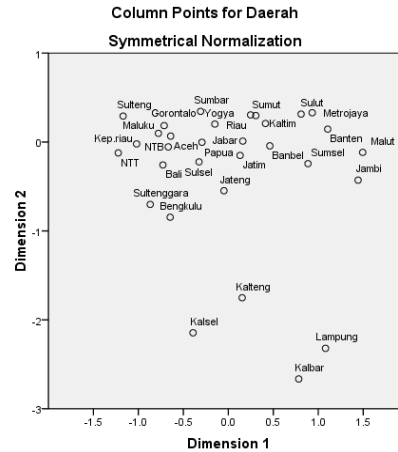
Sources: Agency of Crime Manajemen Mabes Polri

Based on the above data there are 5 types of crimes in Indonesia in 2011, the crime of murder of the largest in North Sumatra, South Sumatra and West Kalimantan and the smallest in South Kalimantan and Bangka Belitung Banten. The crime of rape is the largest in the province of North Sumatra, South Sumatra and East Nusa Tenggara and the smallest province of South Kalimantan, Jakarta, Yogyakarta and North Maluku. Crime maltreatment of the largest provinces of North Sumatra and East Nusa Tenggara and the smallest province of Jambi, Lampung, North Maluku and South Kalimantan. Crimes are most severe persecution northern Sumatra province and Metro Jaya and the smallest is the province of South Kalimantan. Crime largest abduction east Kalimantan province, Metro Jaya and the smallest province of West Java and Central Kalimantan, South Kalimantan, Southeast Sulawesi, Gorontalo and North Maluku. In total, North Sumatra most common crime is as the smallest number of South Kalimantan. Need what problems are you having is why in the province of North Sumatra occurred greatest crime that consists of several types of crime. What the people of North Sumatra there is a gap between the poor with the rich citizens. Another possibility is more respectable habits Batak people become criminals from heavy labor such as construction laborers, porters and others.



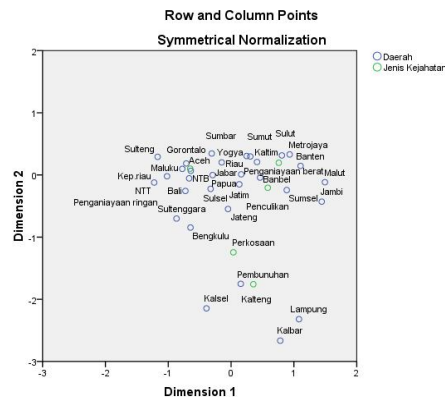
Picture 3.1: graph for types of crime relation

Based on the graph in 3.1, types of criminality severe persecution (*penganiayaan berat*) with abduction (*penculikan*) are in close distance. It means that those crimes have similarity in the way that one is happened coincidently in the same time. Meanwhile, for the type of criminality rape (*pemeriksaan*) and murder (*pembunuhan*), there is similarity between them due to the fact that those crimes are in close distance. It is usual that those 2 types of crimes happened respectively.



Picture 3.2: graph place of crime occurrence

Based on graph in the picture 3.2, it can be seen that North Sumatera (*Sumut*) and Riau which are close in distance show that those provinces are similar and equal. Thence, the similar conclusion can be derived for West Sumatera (*Sumbar*) and Yogya, Maluku and Gorontalo, South East Sulawesi (*Sultengara*) and Bengkulu, Jambi and North Maluku (*Malut*), Central Kalimantan (*Kalteng*) and South Kalimantan (*Kalsel*), and Lampung and West Kalimantan (*Kalbar*)



Picture 3.3: Row and Column Points on types and places of crimes



Based on the joining result on the graph in picture 3.3, it can be interpreted that in North Sumatera (Sumut), North Sulawesi (Sulut), East Kalimantan (*Kaltim*), Metrojaya Jakarta, dan Banten have the similarity in the occurrence of types of crime is severe persecution (*penganiayaan berat*). Where, in those provinces, it can be seen that the socio-economical gaps is relatively high that can provoke criminally especially severe persecution. Meanwhile, for Bangka Belitung (*Banbel*), North Maluku (*Malut*), Jambi, and South Sumatera (*Sumsel*), the type of crime that is often found is abduction. This fact is supported by the geographical factor where most of their area is surrounded with inhabitant area and the fact that bringing weapons is usual. Thence, people tend to force themselves if there are hindrances during their works by abducting the person in charge. Furthermore, in South Sulawesi, Bengkulu and Central Java, criminal in type of rape can be often found. In Central Sulawesi, Gorontalo, Aceh, Nusa West Tenggara and East Nusa Tenggara, there are significant number of maltreatment (*penganiayaan ringan*).

## CONCLUSION AND SUGGESTION

### *Tendency of Certain Area in each Crime*

In the area of Police Departement North Sumatera, North Sulawesi, East Kalimantan, Metro Jaya and Banten, the number of criminality tend to increase significantly on severe procecution. The area where kidnapping is often found is in Bangka Belitung, North Maluku, Jambi and South Sumatera. For the type of criminality rape, South Sulawesi, Bengkulu and Central Java is having significant number.

### *Suggestion*

Based on the result cuncluded above, the police departement in the place should pay more attention and provide special unit who responsible to react as soon as possible those crime happened. Furthermore, preventive action toward certain crime in each area should be done carefully.

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